Analysis of information management and e-learning implementation in HE institutions in Libya

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Abstract:
The aim of this paper is the analysis of the existing state-of-the-art implementation of information management and e-learning systems in Libya (with emphasis on TripoliUniversity). The focus is to identify the factors that act as barriers to creating innovative learning environments of E-learning excellence amongst postgraduate students in Higher Education (HE) in Libya. The paper underlines that in spite of the drawbacks faced by most HE institutions, some have managed to successfully introduce E-learning into their curriculum. Finally the paper proposes a set of recommendations for improving the effectiveness of the use of information management and E-learning systems in Libyan HE based on the results of SWOT analysis performed by the authors about using technology for educational purposes.

Keywords:
Developing country, e-learning management, Libyan higher education, technology transfer, technological infrastructure.

Introduction:
Computer literacy plays a major role in today's education system and the purpose of this study is to identify barriers to E-learning in higher education (HE) in Libya. While most of the HE Institutions in Libya have introduced E-learning as one of the mediums of instruction in courses offered at their institutions and in some it has proved to be a good teaching and learning method, for others it has been a problem from the implementation phase.

In Intel chairman, Craig Barrett's (2007) essay about the ways of bridging Africa's digital divided. He says: "*PCs aren't magic, teachers are magic. If you train teachers effectively in how to use the technology and how to use it in the classroom to make it more interesting more exciting, to teach young people how to solve problems*"(Barrett, 2007).

The challenges are lack of submarine cables, there's no overarching strategy to have a fiber network throughout Africa. By looking at what broadband or ICT can bring they are better education, better health care, and economic development.
E-learning is dependent on technology to deliver instructional content. Institutions must make decisions about technology issues prior to implementing an e-learning strategy. Beyond the obvious questions of what type and how much hardware, software and bandwidth will be needed, institutions must consider how the new technology will be supported. An institution's current information technology group may not have the proper training or credentials to support the implementation of new technology. Considerations will have to be given as to how to will handle the technology and security issues that are forced to arise.

Literature review:

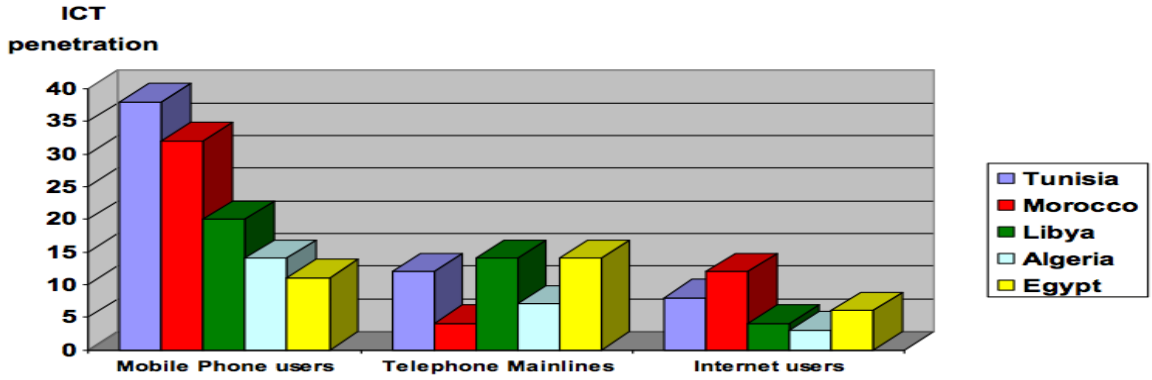
Infrastructure of Communication Technology (ICT) In Libya

Because of its geographical position, Libya plays an important role in influencing the development of other economies from African continent.

Many aspects of education in developing countries still need attention for an effective learning environment; including provision of an adequate telecommunications infrastructure and reliable power supply, the need to provide basic educational facilities and reduction of the learner-teacher ratio to acceptable levels. Libya looks to be addressing most of the challenges it is experiencing in the education sector which explains that, as a country, Libya has realized how far behind it still is in ICT, mainly in the education sector and is working hard to address its particular problems.

Since 2000 there has been an increase in interest in technology in many HEIs in Libya, and more institutions are spending more of their budgets on providing an ICT infrastructure (Porter and Yegin, 2006).

Figure (1): Comparison of ICT penetration in Libya with neighboring countries (Porter and Yegin, 2006)



Basic education in Libya is well developed and literacy levels are among the highest in the Arab region. However, current education does not provide a "job-ready" work force because the education system is disconnected from the demands of the job market. Previous education policy decisions are having a negative effect in important areas for business such as IT and foreign languages(Porter and Yegin, 2006).

Libya wants to match and compete with the standards of other countries' HEIs. This goal is part of Libya's move towards a knowledge society for which ICT is considered a prerequisite. Figure (1) shows ICT penetration in Libya compared with neighboring countries(Porter and Yegin, 2006), and it is clear that network provision and performance for both fixed and mobile telephones remain a major challenge for Libya. Internet usage is also relatively low which a consequence of the poor telephone network is. This will remain the case until the latest technology that allows PCs to communicate directly with the www without a phone line becomes much more widely available in Libya (Porter and Yegin, 2006).

Teaching and Research in Libyan HE

Teaching and learning are the cornerstones of any HEI. However, maintaining the quality of such processes is a continuous challenge.(Kenan, 2009) showed the main teaching methods used by Libyan HEIs are traditional for three main reasons:

- The annual increase in the number of students enrolled.
- Restrictions on financial resources and staff training.
- The administrational system (mismanagement).

In spite of the known weaknesses of such an approach, traditional teaching has provided teachers with the means to deliver the required course material to an ever-increasing number of students and provide those students with a clear-cut minimum of material such that they can easily memorize it (Sarayrah, 2003). Therefore, generally HE students are not contributing to the learning process in the classrooms. They are only listening and taking notes. Furthermore, the use of new technology in Libyan HEIs (such as computers and multimedia in general) is way behind international best practice (Porter and Yegin, 2006). But to involve students effectively in the learning processes, the HEI should adopt an "active learning" approach – whereby the students use resources outside the classroom, libraries, the www, interviews or focus groups, to obtain information (MBNQA, 2004).

E-learning in Libyan Universities

Libya does not recognize distance learning and E-learning as a valid mode of education and most Libyan universities have not appointed a staff member with formal qualifications in either distance learning or E-learning. In fact, the Ministry of Higher Education, which is by law responsible for endorsing degrees from foreign universities, will not endorse a degree obtained through either distance learning or E-learning. Without the approval of the Ministry, students cannot gain any advantages in the work place from their degrees. This is of significant importance and could be developed

In 2003, Tripoli University confined its task to providing a video-conferencing service as a step to the distance learning. The main objective of this distance-learning Centre is to shorten the physical distance between students and their lectures. There have been online examinations; similar in structure to the theoretical part of the UK driving test, and as second step in 2005 some universities used them in the assessment of the second stage of their courses. The public perception of distance learning and E-learning is mainly negative (Abozakher, 2006). The commons belief is that distance learning or E-learning is of a lower quality than traditionally taught course(Abozakher, 2006) These barriers are mainly pedagogical, technological and attitudinal according to the showing in (MBNQA, 2004) The list below presents issues and perceptions about Libyan e-learning that help to provide a context for this study:

A. Although most Libyan universities provide each faculty member with a personal computer, a significant percentage of faculty members are still computer illiterate, and one might reasonably estimate resistance from those members toward any attempt to adopt an E-learning model in their discipline within the university. Also some of faculty members have difficulty with the English language, and as there is a lack of E-learning applications supporting by Arabic. Teaching E-learning courses would be nearly impossible for these staff, even for those who willing to do so(Al-badree, 2007).

B. The lack of interests by university administrations regarding the possibilities of E-learning is also a real challenge. According to (Abouchedid, 2004) University decision-makers fear that E-learning would abruptly shift traditional education into a new pedagogical venture for which educators and policymakers are not sufficiently familiar.

C. In Libya a strong power structure governs the relation between learner and educator, and any learner may feel subservient to the educator and this could prove a problem when the student is asked to discuss his/her views freely with the educator.

D. The lack of Arabic learning tools and applications for E-learning courses will be a serious challenge implementing E-learning into Libyan HE, peculiarly in the more theoretical colleges where Arabic language is the teaching language. But even for the science based colleges where English is the official teaching language, the lack of Arabic learning applications might cause a problem for a large proportion of students.

Challenges Facing On Succession E-Learning in Libya:

Since 2005 there have been ongoing courses in Libya to train educators in E-learning implementation**;** but it became integrated into the HE examination process in 2006 (Al-badree, 2007) which is important because Libyan universities are still a stronghold of tradition. Although initial introduction of the E-learning opportunities in HEIs seems to be successful, there are still many challenges that might prevent the general adoption of E-learning. These challenges are mainly pedagogical, technological, and attitudinal (Al-badree, 2007). The introduction of an E-learning program into the learning system in a specific country must take into consideration the social and cultural aspects of that society. The social and cultural background of the educator and learner plays a significant role in determining the effectiveness of E-learning.

Libyan universities could benefit from the active learning notion, and develop it as E-learning, where students are not only listeners in the class but interact with the teacher and discuss together the knowledge offered by the subject. Both active learning and E-learning encourage students to use various sources of knowledge, and persuades them to integrate and employ information efficiently, so that students are enabled to create questions and discuss new ideas inside working teams where information is shared towards achieving a common goal; whereas, the active learning is a subfield of machine learning or the artificial intelligence. It is allowed to choosing the data. Consider that, for any supervised learning system to perform well.

The teaching load in Libyan universities is typically large, e.g. the average number of teaching hours for academic staff is 24 hours/week, and Libyan universities have not yet established a scientific research tradition (Al-teer, 2006, Al-badree, 2007). Thus, even Professors find it difficult to find the time for research activity and educational development. The postgraduate programmes initiated in 1973 in some faculties in Libyan universities included education (Tripoli University) and literature.

HAMAD (2006) points out that most research offered by Libyan universities is generally in the form of a 'research exercise' i.e. dissertations introduced by students to obtain certificates, or by academic staff to complete the academic requirements for job promotion; so the goals of such research have not emerged from the real needs of society (Hamad, 2006). The Libyan business executive survey/global competitiveness report (LBES/GCR) ranks Libya 97th out of 111 countries in university/industry research collaboration (Porter and Yegin, 2006). Nevertheless, some academic staff does undertake extra activities such as writing and publishing, e.g. text books, to increase their income. However, there is agreement among a number of Libyan educators including HAMAD (2006), Alhawat (2005), Albadree (2007), Artemi & Ajit (2009) and Kenan (2009) that students on postgraduate programmes in Libyan universities encountered the following difficulties:

1. Lack of clear philosophy and objectives.
2. Absence of a plan for building the human cadre needed by society.
3. Absence of effective administration.
4. Lack of staff development Libyan HE. It is only recently that structured staff development has become available to academic staff.
5. Lack of a common policy (based on scientific and international criteria) regarding the acceptance of students onto a research degree.
6. Absence of any effective research contribution from academic staff members, due to their high teaching load.
7. Shortage of research activities in science and engineering in Libyan HEIs due the lack of necessary facilities.
8. Ineffectiveness of postgraduate programmes and inability to realise their goals and objectives.

9. Reliance on traditional methods for assessing student performance, which do not consider the real readiness, capability and skills of the student.

These difficulties are encountered by all learners in Libyan HEIs and not only by people attendant in postgraduate program. Naturally, achieving such a plan will require Libyan HEIs to create a network to enhance the flow of information and provide mutual support and co-operation. E-learning has the potential to be a significant part of the solution for these issues.

Evaluation of the ICT gap in Libya

There is another indicator for the spread of Information Communication Technology (ICT) applications in education system computers, the number of computers per hundred students, the number of hours of study in the field of ICT, the number of schools that use the Internet, the average number of Internet sites per school, the speed of the Internet connection, and specialist television and radio broadcasts. These indicators can be used on a global scale to determine whether there is a "digital divide" between countries, since the summary of these measures could be used as a measure of any digital gap.

Al-teer (2006) concludes that because the technical and technological level existing in a country largely determines the rate at which IT develops, the developing countries will not catch up easily. EL-HAWAT is concerned that developing countries may miss out on the opportunities offered by the information and communication revolution because of an inability to fully participate in all spheres of political, economic, cultural, scientific life provided by the IT revolution of new technology.

Al-badree (2007) and El-hawat (2009) highlight the case of the Arab homeland in the digital divide. Tripoli University conducted a study of web usage in the Middle East; It was shown that the although there was an increase in the number of internet users in the Middle East by 476.3% during the last six years, this represented at the end of 2006, some 9 million users, about 1.8% of Internet users in the world. On a world scale, Africa had 3.6% of Internet users, the Middle East, 10%, Asia 11%, Europe 39.4% and North America 67% (http://www.alfateh.edu.ly/). This shows that is a substantial digital-gab between countries which will take time to be reduced.

Resistance to growth of E-learning in Libya

Kenan (2009) and (kenan et al., 2010) studied the challenges of implementing e-learning in Libyan HE. They can be classified into three main categories:

A. Technological resistance:

1. Insufficient network and systems infrastructures.
2. Weaknesses of E-learning development in HEIs.
3. Difficulties in overcoming initial implementation problems.
4. Lack of experience in using technology.
5. Lack of provision of robust Internet access.
6. Lack of specific student services

B. Cultural resistance:

1. Unfamiliarity with the Internet and related technologies results in lack of appreciation and understanding of E-learning and its benefits.
2. Opposition to the adoption of the necessary educational changes (e.g. self regulation, student centred) required for successful E-learning.

C. Other issues:

1. Lack of a general strategy of education linking the different stages of study, with a consequent difficulty in accepting E-learning in HE.
2. Lack of common regulations or standards for E-learning in a country, which does not generally approve of such methodology.
3. Disapproval from the Ministry of Higher Education for E-learning courses.

4. Difficulty in securing accreditation collaboration.
5. Lack of cross-institutional collaboration.

History of SWOT (Strengths, Weaknesses, Opportunities, Threats) Model using:

SWOT Model may limit the strategies considered in the evaluation (Scott, 1982) notes: *"people who use SWOT might conclude that they have done an adequate job of planning and ignore such sensible things as defining the firm's objectives for alternate strategies"*. SWOT is an acronym for strengths, weaknesses, opportunities and threats. It is the culmination of much internal analysis and external research. Thinking about the outcome, one can define SWOT analysis as the extent to which a firm's current strategy, strengths and weaknesses are relevant to the business environment that the company is operating in.

SOWT analysis:

Incontestably, e-learning will continue to grow in all organisations. In expectation of this growth, the governments, business companies and professional associations can start focusing on applications and the effective and professional implementation of e-learning. The real e-learning is a methodology, one can experience the greatest benefits that e-learning has to offer now and in the future. However, the fact remains that; with respect to e-learning, poor quality procurement practices are a barrier to growth and adoption. So it is necessary to make a thorough evaluation when it comes to choose e-learning software for education in order to improve the knowledge of learners, the learning outcomes, the performance outcomes, the business and policy impact and in order to value the cost spent. Rhema and Miliszewska (2011) undertook a SOWT study as shown in Table (1) on Libya's HE. They said that "*SWOT analysis is an essential step to analyze various factors before implementing an e-learning solution at any institution*" and point, the success or failure of an E-learning initiative will be directly related to the quality of strategic thinking that underpins it. One may liken the E-learning strategy to a map, supplying the necessary directions for the journey towards implementing E-learning. It is thus important to have an E-learning strategy in place before beginning the implementation process. Artemi & Ajit (2009) emphasized that an E-learning initiative must be tied to the institution's core business to ensure that the business objectives are met.

Table (1): SWOT analysis of E-learning in the Data Analysis of Libyan HEIs. (Rhema and Miliszewska, 2011)

SWOT analysis for teachers.			
Strengths	**Weaknesses**	**Opportunities**	**Threats**
1. Motivation and dedication. 2.expertise in using computers	1.lack of experience in teaching with new technologies 2.lack of willingness of learn and adopt new teaching methods (flexible learning) 3.insufficient space and time for learning new technologies 4.poor English skills	1. Vacation or scientific leaves, professional meeting attendance professional development seminars and workshops). 2. Various funding opportunities for improving the educational methodology.	1. The possibility of losing faculty members with expertise in E-learning. 2. Lack of strong industry cooperation for the development of new technologies. 3.declining enrolment (interest) in fields that use e-learning
SWOT analysis for Students.			
Strengths	**Weaknesses**	**Opportunities**	**Threats**
1.student ability to face challenges 2.student willingness to accept changes	1.the lack of motivation 2. Lack of tutors (graduate students) with experience in e-learning 3. Inadequate language skills 4. Inadequate in critical or analytical thinking	1.student development opportunities in the skills (computer, English courses) 2. Excellent faculty as role models and mentors 3.possibility to influence the high school curriculum 4. Increased student enrolment.	1.increasing proportion of new faculty with relatively less experience and/or interest in teaching (focused on research) 2. Emerging local and regional competition
SWOT analysis for Technical staffs and Administrators			
Strengths	**Weaknesses**	**Opportunities**	**Threats**
1. Well-equipped. 2.availability of computer based infrastructure	1.lack of competent technical support staff and graduate students for projects and lab development 2.inadequate space for expansion of labs 3.centralised decision making process	1.currently sufficient funding 2.competent faculty for supervising lab development 3. New campus project	1.the need to keep up with the fast pace of developments (especially in IT) 2. Future budgetary limitations 3.changes in policy and regulation in higher education in Libya.

Table (1) containing the SWOT analysis results show that the Information Management (IM) strategy is useful for successful implementations of e-learning. This strategy aims to help the decision makers at the departmental level to decide on opportunities with respect to e-learning. The analysis was based on the experiences as well as the perceptions of the instructors, students, administrators, and technical staff about using web-based instruction with the institution.
Artemi & Ajit (2009), Kenan (2009) present a critical review of research pertinent to a SWOT analysis of an e-learning model for Libyan HEIs. The review recommends that the institutions should start working hard on minimizing the weaknesses such as poor English skills of students as well as instructors, lacking ICT infrastructure, and lack of e-learning know-how. Also, to relieve the threats, they recommend the use of a blended model (a combination of traditional and e-learning methods). Thus and as a strong result, SWOT analysis is important commission to analyse various factors before implementing an e-learning solution at any Libyan HEIs.
Kenan (2009) explained the reasons of formulating these questions in order to find out the sources of perceived opposition to e-learning implementation and use, the benefits of using e-learning packages and the requirements for improving the effectiveness of e-learning systems.

Research methodology:

The current study involved a sample of 63 respondents from general and private HE organisations. In terms of gender, 12 (19.05%) were females and 51 (80.95%) were male, they were of different ages. All of them were active in Libyan's HE. The diversity of the sample allows it to be considered a comprehensive sample representing all sections of Libyan HEIs. This paper considers the quantitative method as shown in the results of the questionnaire in 2009. A quantitative research method generally involves numerical data, which can be quantified to help answer research questions, and takes the form of a questionnaire (Saunders et al., 2003).

In this paper the data are collected from many previous studies, which are coming by the quantitative method, because of many considers of analysis process as: concerned with hypothesis testing, uses large sample, data is highly specific, reliability is high and generalize from sample to population.

SWOT method:

The meaning of SWOT and explain what each term means, particularly the possible distinction between 'strength' and 'opportunity', 'weakness' and 'threat'. 'Opportunity' and 'threat' should both focus on possible future consequences, whilst 'strength' and 'weakness' may both involve the generation of a list of positives and negatives of the proposal as it stands, based on a consideration of what has gone before. This is a strategy depend on thinking about any activity, then take result it to make the suitable decision and solve the problem.
SOWT method is helps to test or analysing all sides of any project. It can be used during the formulation stages of the planning to more developments. It also is a convenient tool for the evaluation in order to idea to look for future consequences.
SWOT activity can be carried out in different ways. Therefore, it is selected to manage the e-learning in the Libyan HEIs.

Findings:

Analysis of ICT and E-learning in Libyan HEIs.

A. Respondents assessment of those persons resisting E-learning in Libya.

The **SWOT** analysis with respect to using web-based instruction will discuss the details of project implementation and its ability to support a new pedagogical framework ('before', 'during', and 'after' activities) for many areas; for example, the financial strategies, industry engineering and organizational of e-learning.
Kenan (2009) analyzed her research data at Tripoli University in Libya. The background information about the questionnaire and outlines the **SWOT** analysis of technology for educational

purposes. It also describes how implementation e-learning framework for teaching and learning, and presents the reflections of the students, instructors, and technical staff on the trial implementation. Interestingly more respondents perceived academic staff as the major barrier to E-learning than any other obstacle. In Table (2) the Academic staff (29 %) feels the traditional method is the best.

Table (2): Perceived opposition to E-learning by group

Case	Frequency	Percent
Academic staff (teachers)	**18**	28.6%
Training staff	**14**	22.2%
Government team	**13**	20.6%
Leadership	**10**	15.9%
Students and scholars	**8**	12.7%

B. Respondents' assessment of likely benefits of E-learning.

The question asked what would be the expected outcomes from implementing E-learning in HEIs in Libya. The respondents were restricted to only one response, though there are likely to be many benefits from E-learning. Table (3) summaries the responses obtained. Some respondents added their own comments, such as; "E-learning will solve most problems of Libyan HEI's", "… maybe E-learning will improve student behavior" and: "It is an opportunity for many who are qualified to continue in education, but whose circumstances forced them to stop".

Table (3): Respondents perceived benefits of E-learning

Benefit	Frequency	Percent
Language skills acquired	37	58.7%
IT skills acquired	10	15.9%
Time management	7	11.1%
Comfortable education	6	9.5%
New method	3	4.8%

C. Respondents' assessment of the most important component necessary to achieve E-learning in Libya.

To be successful, any attempt to implement E-learning must know the first step to take and this is an important component for success. The respondents were asked what was the most important first requirement to achieve successful E-learning in Libya. Table (4) shows the results.

Table (4): Respondents suggested requirements for achieving E-learning

Requirement	Frequency	Percent
Libyan ICT infrastructure.	**38**	60.3%
Creation of in-campus Broadband network.	**15**	23.8%
Internet access.	**10**	15.9%

These results of SWOT analysis reflect the main aspects, which should be considered when developing more effective Information Management (IM) strategies.

D. Respondents' assessment of the barriers to achieve E-learning in Libya.

(kenan et al., 2010) reported a paper in Florida about the barriers of e-learning in the HEIs in Libya. And grouped the barriers into four categories based on the conclusions from her study and personal experience as an academic. See Table (5):

a) Management barriers b) Technological barriers

c) Cultural barriers d) Barriers due to other factors such as cost, etc.

Table (5): Respondents perceived the barriers of E-learning in Libya

Requirement	Frequency	Percent
Technology	22	34.9%
Mismanagement	18	28.6%
Culture	13	20.6%
Others	10	15.9%

E. Respondents' assessment of the percentage of computer users in the HEIs in Libya.

From other hand, when check the computer users in the Libyan HEIs in Table (6), the respondents were shown their usage to computers, which consider the major point to success the e-learning in the HEIs in Libya, there are some respondents add: *"I don't like using the computer without the internet"* and other one added: *"I am using the chat every day".(Kenan, 2009)*

Table (6): Respondents perceived the usage of computer in the HEIs in Libya

Requirement	Frequency	Percent
Every day	13	20.6%
3-4 times every week	22	34.9%
1-2 times every week	25	39.6%
Sometimes	3	4.7%
Never	0	0%

Libya has a strategic geographical location in Africa and the e-learning packages developed by the companies situated in the south of Libya could be used by people Niger, Sudan, Mali, and Chad. Also people living at long distances from the main Libyan universities (such as Awbari, Ghat, Aljawf and Alkoofra) could complete their courses by distance learning (Kenan et al., 2010).

Implementation of e-learning strategy:

An e-learning strategy will offer a framework for the assessment all the things that impact on the E-learning implementation. The strategy should be sufficiently flexible to accommodate changes in the developments in E-learning products, services and technology. The implementation of e-learning in an official setting requires inclusive strategic planning. Changing the educational offering through technology requires utilizing effective implementation plans and strategies (Rhema and Miliszewska, 2010). Implementing any type of process that involves change and alters how people work can present difficulties for an organization. Estimates have shown that up to 70 percent of the cost of implementing a major organizational change effort has been linked to managing employee behavior during the transition (Dyche, 2002).

The process of transforming organizations' objectives into strategies that deliver lasting, sustainable change is, to a large extent, dependent on how institutions approach changing everyday processes. When there are major shifts in the processes faculty and staff rely on to do their jobs on a daily basis, senior administration must fully endorse and engage in the planning, development, and launch of the initiative for it to be successful (Moad, 2006).

Once the key players are committed to the implementation process, quality control and measurable outcomes must be considered as part of implementation (P.Jan et al., 2009).

However, a SWOT analysis looks at the main environmental issues such as the economic situation, social changes such as the population getting older and technological developments.
Consequently, may have been taken SOWT analysis from all these reviews about Libyan HEIs as following:

Table (7): SWOT analysis of e-learning in Libya's HEIs.

Strengths:	***Weakness:***
1. Using the computers 2. The enjoying by the Internet websites. 3. Availability of educational methods. 4. Availability many Software to support	1. Libyan ICT infrastructure. 2. Internet access. 3. Mismanagement 4. Lack of development in HEIs in

the operations of the education. 5. The importance of Libya's geographic.	Libya 5. The width of Libya's area.
Opportunities:	***Threats:***
1. Language skills acquired 2. IT skills 3. Time management 4. Comfortable education 5. New method	1. Culture barriers 2. Lack of dependency the IT industry. 3. Lack of employments of graduates of e-learning.

The conclusions of SWOT analysis should help the managers and users to choose the convenient e-learning software packages for education. The following aspects should be considered: improvement of the learners' knowledge, learning outcomes, efficiency of the teaching and learning processes and the reductions of costs.

Implication for future research:

E-learning is dependent on technology to deliver the instructional content. The Libyan HEIs must make decisions about technology issues previous to the implementation of the e-learning strategies. Beyond the questions of what type and how much hardware, software and bandwidth will be needed, institutions must consider how the new technology will be supported. The data protection and other security issues should be also considered. The review of different learning management systems should be done and the technology issues related to the implementation of the chosen e-learning systems should be taken into account afterwards. It is important for the HEIs to determine how to use technology as a teaching tool framed within their particular learning pedagogy and to change their existing teaching and learning methods in accordance with the pedagogy related to e-learning.

1. Recommendations to improve the learners' knowledge and understanding

- Libyan HE Institutions should hire an adequate number of support staff to be responsible for administrative duties and take this heavy burden away from academic staff. Support staff may be utilized to regularly check that the course content has been updated.

- Instructors should share with the learners their availability schedule so that learners can know when to expect a response from an instructor. A backup plan should be put in place in cases where the instructor will be out of reach or unavailable for a long period and staff members should be provided for support.

- It would be beneficial for the e-learning systems to have the course content available in Arabic and English languages. As the country has not yet reached a stage where most of the learning materials are home developed, it might be premature to suggest course content to be only in Arabic, as English is considered to be the medium of instruction.

2. Recommendations for institutions in implementation of policies

- The employees from HEIs should be encouraged to attend internal and external workshops so the software and hardware packages and the relevant ICT support can be updated continuously.

- To be successful E-learning should have the affirmative support of senior management and a fixed budget that has been set aside to maintain and develop E-learning facilities.

- Course instructors and developers should attend regular training courses related to the new hardware, software and learning management packages.

- The Libyan learners have different educational experiences based on the geographic location of their colleges and universities: the learners from rich areas (such as Tripoli Town Centre) have access to the latest state-of-the-art technology; learners from suburban areas have a lifestyle similar to more developed countries, and learners from areas such as Koofra city have third world experiences and never saw or used a computer until they reach HE. Therefore, the mindsets and the attitudes towards learning of such diverse learners should be taken into consideration.

3. Recommendations for governmental HE policies

- The Libyan government should give more support to HEIs that have shown success in the implementation and management of E-learning so these institutions will feel encouraged to share their success with other institutions. More coordination and resource sharing between different HEIs could be of general benefit.

- Government departments and the private sector should be encouraged to sponsor development of technologies in HE that will produce a workforce that is competent in technologies.

Conclusions:

The paper presents the analysis of the existing state-of-the-art implementation of information management and e-learning systems in Libya (with emphasis on Tripoli University). The focus was to identify the factors that act as barriers to creating innovative learning environments of E-learning excellence amongst postgraduate students in Higher Education (HE) in Libya. The paper underlines that in spite of the drawbacks faced by most HE institutions, some have managed to successfully introduce E-learning into their curriculum. Finally the paper proposes a set of recommendations for improving the effectiveness of the use of information management and E-learning systems in Libyan HE based on the results of SWOT analysis performed by the authors about using technology for educational purposes.

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